

# REPORT ON ELECTRIC FITTINGS.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

1 JAN 1929

Date of writing Report

19

When handed in at Local Office

28/12 28

Port of Trieste

Received at London Office

No. in Survey held at

Moufalone

Date, First Survey

7/10/27

Last Survey

17/12

1928

Reg. Book.

87691

on the T. S. M. S. Vulcania

(Number of Visits.....)

15

Tons { Gross 23976  
Net 14476

Built at

Moufalone

By whom built

Capt. Nav. Triest

Yard No. 161

When built 1928

Owners

Carulich Soc. Triest. di Nav. Port belonging to Trieste

Electric Light Installation fitted by

Cantiere Navale Triestino

Contract No. -

When fitted 1928

System of Distribution *Two wire*

Pressure of supply for Lighting *110* volts, Heating *230* volts, Power *230* volts.

Direct or Alternating Current, Lighting *Direct* Power *Direct*

If alternating current system, state frequency of periods per second -

Has the Automatic Governor been tested and found efficient when the whole load is suddenly thrown on or off *yes*

Generators, do they comply with the requirements regarding rating *yes*, are they compound wound *yes*

are they over compounded 5 per cent. *yes*, if not compound wound state distance between each generator -

Where more than one generator is fitted are they arranged to run in parallel *yes*, is an adjustable regulating resistance fitted in series with each shunt field *yes*

Are all terminals accessible, clearly marked, and furnished with sockets *yes*, are they so spaced or shielded that they cannot be accidentally earthed, short circuited, or touched *yes*

Position of Generators *One 400 kw in Main E. R. Two 900 kw in the Auxiliaries room*

is the ventilation in way of the generators satisfactory *yes*, are they clear of all inflammable material *yes*

if situated near unprotected woodwork or other combustible material, state distance of same horizontally from or vertically above the generators - and - , are the generators protected from mechanical injury and damage from water, steam or oil *yes*

are their axes of rotation fore and aft *yes*

Earthing, are the bedplates and frames of the generating plant efficiently earthed *yes* are the prime movers and their respective generators in metallic contact *yes*

Main Switch Boards, where placed *In the Auxiliary Motor room*

If the generators and main switchboard are not placed in the same compartment, is each generator provided with a fuse on each insulated pole as near as possible to the terminals of the generator, additional to that provided on the main switchboard *yes Overload switches*

Switchboards, are they placed in accessible positions, free from inflammable gases and acid fumes *yes*

are they protected from mechanical injury and damage from water, steam or oil *yes*, if situated near unprotected woodwork or other combustible material, state distance of same horizontally from or vertically above the switchboards - and -

are they constructed wholly of durable, non-ignitable non-absorbent materials *yes*, is all insulation of high dielectric strength and of permanently high insulation resistance *yes*

if semi-insulating material is used, are all conducting parts insulated from the slab with mica or micanite or other non-hygroscopic insulating material, and the slab similarly insulated from its framework *Asbestos Compound*

and is the frame effectively earthed *yes*. Are the fittings as per Rule regarding: - spacing or shielding of live parts *yes*, accessibility of all parts *yes*, absence of fuses on back of board *yes*, proportion of omnibus bars *yes*

individual fuses to voltmeter, pilot or earth lamp *yes*, connections of switches *yes*

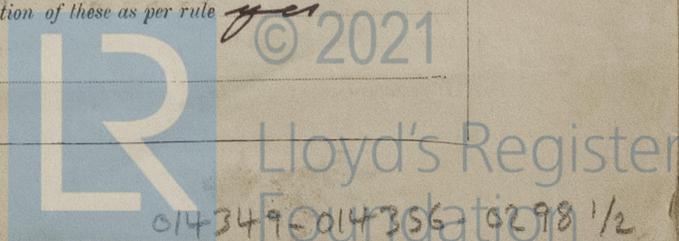
Main Switchgear, description of switchgear for each generator, and each outgoing circuit, and arrangement of equalizer switches *Overload and reverse current trip switches with equalizer fuses interlocked. Double pole overload circuit breaker for loads above 500 A. Single pole overload circuit breaker for loads from 200 to 500 A. with fuse to other pole. Double pole link switches with fuse to each pole for loads below 200 A.*

Instruments on main switchboard *17* ammeters *4* voltmeters - synchronising device for paralleling purposes. *Also one ammeter to each outgoing circuit for Aux. Switch Boards.*

Earth Testing, state what means are provided at the main switchboard for indicating the state of the insulation of the system *contacts to Voltmeters*

Switches, Circuit Breakers and Fusible Cut-outs, do these comply with the requirements of the Rules *yes*

Joint Boxes Section and Distribution Boards, is the construction, protection, insulation, material, and position of these as per rule *yes*



**Cables:** Single, twin, concentric, or multicore *single & twin* are the cables insulated and protected as per Tables IV or V of the Rules *yes*

**Fall of Pressure,** state maximum between bus bars and any point of the installation under maximum load

**Cable Sockets and other connections,** are the ends of all cables having a sectional area of 0.04 square inch and above provided with soldering sockets *yes*

**Paper Insulated Cables,** If cables are paper covered, is the dielectric at the exposed ends of the conductor protected from moisture by being suitably sealed with insulating compound *none*

**Cable Runs,** are the cables fixed as far as possible in accessible positions not exposed to drip or accumulation of water or oil, or to high temperature from boilers, steam pipes, uptakes or other hot objects, or to avoidable risk of mechanical damage *yes*

**Support and Protection of Cables,** state how the cables are supported and protected *Armoured or lead covered cables supported by clips*

If cables are run in wood casings, are the casings and caps secured by screws —, are the cap screws of brass —, are the cables run in separate grooves —. If armoured and lead covered cables are secured by metal clips, are the clips spaced as per Table VIII *yes*

**Refrigerated Chambers,** if lights are fitted, are the cables and fittings in accordance with the special requirements *yes in ship's Store Chamber*

**Joints in Cables,** state if any, and how made, insulated, and protected *WT junction boxes*

**Watertight Glands and Deck Tubes,** are all cables passing through decks and watertight bulkheads provided with deck tubes or watertight glands *yes*

**Bushes in Beams and Non-watertight Partitions,** where unarmoured cables pass through beams and non-watertight partitions, are the holes efficiently bushed *yes* state the material of which the bushes are made *lead or hard wood*

**Earthing Connections,** state what earthing connections are fitted and their respective sectional areas —, are their connections made as per Rule —

**Alternative Lighting,** are the groups of lights in the propelling machinery space arranged as per Rule *yes*

**Emergency Supply,** state position and method of control of the emergency supply and how the generator is driven *on deck C. Special P.B. with an overload double pole circuit breaker for generator and double pole link switches with fuses to each pole for each outgoing circuit.*

**Navigation Lamps,** are these separately wired *yes*, controlled by separate switch and separate fuses *yes*, are the fuses double pole *yes*, are the switches and fuses grouped in a position accessible only to the officers on watch *yes*, has each navigation lamp an automatic indicator as per Rule *yes*

**Secondary Batteries,** are they constructed and fitted as per Rule *yes*

**Fittings,** are all fittings on weather decks, in stokeholds and engine rooms and wherever exposed to drip or condensed moisture, watertight *yes*, are any fittings placed in spaces in which goods are liable to be stacked in close proximity to them; if so, how are they protected *Armoured cables passed in tubes. Leads from generators to P.B. in special ventilated casing*, are any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected *no*, how are the cables led

where are the controlling switches situated —

**Searchlight Lamps, No. of** *none*, whether fixed or portable —, are their fittings as per Rule —

**Arc Lamps,** other than searchlight lamps, No. of —, are their live parts insulated from the frame or case —, are their fittings as per Rule —

**Motors,** are their working parts readily accessible *yes*, are the coils self-contained and readily removable for replacement *yes*, are the brushes, brush holders, terminals and lubricating arrangements as per Rule *yes*, are the motors placed in well-ventilated compartments in which inflammable gases cannot accumulate and clear of all inflammable material *yes*, are they protected from mechanical injury and damage from water, steam or oil *yes*, are their axes of rotation fore and aft *yes*, if situated near unprotected woodwork or other combustible material, are the motors of the totally enclosed, pipe ventilated, forced draught, drip or flame proof type *fatally enclosed*, if not of this type, state distance of the combustible material horizontally or vertically above the motors — and —

**Control Gear and Resistances,** are the generator field and motor speed regulators, starters and controllers constructed and fitted as per Rule *yes*

**Lightning Conductors,** where lightning conductors are required, are these fitted as per Rule *none. Hel mast*

**Ships carrying Oil having a Flash Point less than 150° F.** Have the special requirements of the Rules been complied with regarding switches, joint boxes, section and distribution boards, protection of cables, method of distribution, lead of cables, lights and fittings —

If portable lamps for use in dangerous spaces are supplied, are they of a type approved by the Home Office —

PARTICULARS OF GENERATING PLANT.

DESCRIPTION OF GENERATOR.	No of	RATED AT				DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE.	
		Kilowatts.	Volts.	Amps.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN	2	1800	230	4100 x 2	195	6 Cyl. S.P. H.C. Diesel	Diesel Oil	
AUXILIARY	1	450	230	2050	195	3 Cyl. S.P. H.C. Diesel	" "	
EMERGENCY	1	30	115	242	1250	Petrol motor	Petrol	
ROTARY TRANSFORMER	2	160/120	230/110	725/1100	675	Steam Turbine	Petrol 12.35	

LIGHTING AND HEATING CONDUCTORS.

Ref. No.	DESCRIPTION.	No. of Conductors.	Effective Area of each Conductor. Sq. Ins.	COMPOSITION OF STRAND.		Total Maximum Current. Amperes.	Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
				No.	Diameter.				
42-43	MAIN GENERATOR	3 bars	744	3	62 x 12	4100	36	bare	Keel casing
	EQUALISER CONNECTIONS	4 "	328	4	62 x 5.3		36	"	"
44	AUXILIARY GENERATOR	6 cables	496	61	62 x 8	2000	100	rubber	armoured
	EMERGENCY GENERATOR	1 "	242	61	2.25	242	36	"	"
41	ROTARY TRANSFORMER	3/6	299/242	61/61	2.5/2.5	725/1100	200	"	"
Starb. 19	Equalizer	23	299	61	2.5	853	100	"	"
Port 22	AUXILIARY SWITCHBOARDS	3	299	61	2.5	1107	150	"	"
19	ENGINE ROOM Aux. S.B.	1	15	7	1.6	445	60	"	"
41(1,2,3)	Accommodation from Sub. S.B.	1	4699	76	37	09/61/85	3677	"	Arm. or lead cov.
17	To Substation I 220V	2	242	61	2.25	529	30	"	Armoured
18	To Substation II 220V	6	324	61	2.6	2177	300	"	"
25	To Substation III 220V	2	242	61	2.25	458	300	"	"
41(1)	To Substation I 110V	2	299	61	2.5	468	300	"	"
41(2)	To Substation II 110V	4	394	91	2.35	1054	300	"	"
41(3)	To Substation III 110V	2	394	91	2.35	566	300	"	"
20(4)	To Emergency S.B.	1	242	61	2.25	202	250	"	"
20(56)	Navigation	1	665	7	1.1	110	150	"	"
C 3	Secondary Battery	1	14/242	7/61	1.6/2.25	40/250	200	"	"
20	WIRELESS	1	215	19	1.2	45	300	"	"
	SEARCHLIGHT							"	"
56	MASTHEAD LIGHT	1	1.3	1	1.3	0.5	250	"	"
56	SIDE LIGHTS	1	1.3	1	1.3	0.5	50	"	"
56	COMPASS LIGHTS	1	1.3	1	1.3	0.2	20	"	Lead covered
56	POOP LIGHTS	1	1.3	1	1.3	0.5	500	"	Armoured
18	CARGO LIGHTS	1	4.5	7	0.9	20	300	"	"
	ARC LAMPS							"	"
	HEATERS	1	1.3	1	1.3	3		"	"

MOTOR CONDUCTORS.

Ref. No.	DESCRIPTION.	No. of Motors.	Effective Area of each Conductor. Sq. Ins.	COMPOSITION OF STRAND.		Total Maximum Current. Amperes.	Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
				No.	Diameter.				
42 35	BALLAST PUMP	2	74	37	1.6	115	90	rubber	Armoured
32 33	MAIN BILGE LINE PUMPS	2	38	19	1.6	78	190	"	"
8 9	GENERAL SERVICE PUMP	2	51	19	1.85	98	130	"	"
19	EMERGENCY BILGE PUMP	1	147	37	2.25	103	200	"	"
13 14	SANITARY PUMP	2	394	91	2.35	338	120	"	"
19 22	CIRC. SEA WATER PUMPS	4	181	37	2.5	226	250	"	"
19 22	CIRC. FRESH WATER PUMPS	2	99	37	1.85	154	150	"	"
25 26	AIR COMPRESSOR Refrig.	2	147	37	2.25	192	800	"	"
36 37	FRESH WATER PUMP	2	59	19	2	103	130	"	"
10.11.30	ENGINE TURNING GEAR Aux.	6	45	7	0.9	9	80	"	"
31.13.9	ENGINE TURNING GEAR Main	2	51	19	1.85	98	180	"	"
19 22	LUBRICATING OIL PUMPS	4	394	91	2.35	376	180	"	"
2 3	OIL FUEL TRANSFER PUMP	2	74	37	1.6	115	300	"	"
15	WINDLASS HATING. 1 H.	1	324	61	2.6	420	1050	"	"
16	WINCHES, FORWARD 7/2 H.	20	2x394	91	2.35	1061	450	"	"
24	WINCHES, AFT 7/2 H.	22	3x324	61	2.6	1495	500	"	"
27	STEERING GEAR	2	160	32	2.35	200	1200	"	"
40	Aux. Comp. Circ. Pump	1	51	19	1.85	82	90	"	"
41	Bilge Pump Direct	1	7	7	1.1	28	80	"	"
5	WORKSHOP MOTOR	8	2x665	7	1.1	53	120	"	"
20 21	Supercharges Ventilating Fans	2	3x299	61	2.5	661	350	"	"
28	Refriger. Space S.B.	6	51	19	1.85	96	300	"	"
38 39	Circ. Sea W. for Aux. Mot.	3	51	19	1.85	90	90	"	"
12 29	Oil Filters	4	4.5	7	0.9	9	40	"	"
34	Additional Lubr. Pump	1	51	19	1.85	98	90	"	"
22	Cold F.W. Pump	2	51	19	1.85	98	90	"	"
22	Warm F.W. Pump	2	1.3	1	1.4	4	120	"	"
22	Oil Fuel Pump Gen. Serv.	2	4.45	7	0.9	18	60	"	"
22	Ozone Motors	2	4.45	7	0.9	14	160	"	"
	Thermo Tanks 12 H.	20	14.7	7	1.6	47	440	"	"
	Thermo Tanks 9 H.	8	14.7	7	1.6	32	900	"	"
	Donkey Boiler Fans	4	1.3	1	1.2	4	200	"	"

All Conductors are of annealed copper conforming to British Standard Specification No. 7.  
 The Insulated Conductors are guaranteed to withstand the immersion and resistance tests specified in the Rules.  
 The foregoing is a correct description.

**CANTIERE NAVALE TRIESTINO**

*[Signature]*

Electrical Engineers.

Date *27. XII. 1928*

**COMPASSES.**

Distance between electric generators or motors and standard compass *36'*  
 Distance between electric generators or motors and steering compass *28'*  
 The nearest cables to the compasses are as follows:—  
 A cable carrying *15* Ampères *3* feet from standard compass *5* feet from steering compass.  
 A cable carrying \_\_\_\_\_ Ampères \_\_\_\_\_ feet from standard compass \_\_\_\_\_ feet from steering compass.  
 A cable carrying \_\_\_\_\_ Ampères \_\_\_\_\_ feet from standard compass \_\_\_\_\_ feet from steering compass.  
 Have the compasses been adjusted with and without the electric installation at work at full power *yes*  
 Has the effect of switching on and off circuits, motors and other electro-magnetic apparatus within the vicinity of the compasses been noted *yes*  
 The maximum deviation due to electric currents was found to be *none* degrees on \_\_\_\_\_ course in the case of the standard compass, and \_\_\_\_\_ degrees on \_\_\_\_\_ course in the case of the steering compass.

**CANTIERE NAVALE TRIESTINO**

Builder's Signature.

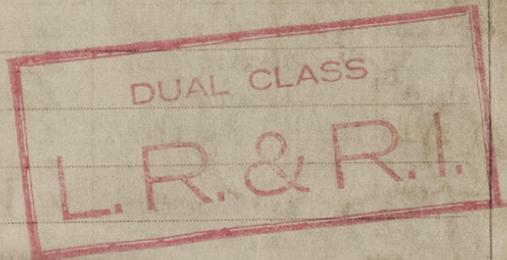
Date *27. XII. 1928*

Is this installation a duplicate of a previous case *yes* If so, state name of vessel *M.S. Saturnia*

General Remarks (State quality of workmanship, opinions as to class, &c.)

*This installation has been made in accordance with the Rules, the material and workmanship are good. The whole installation and generators have been tested under full working condition and found satisfactory.*

*It is submitted that this vessel is eligible for THE RECORD, Elec. Light.*



Im. 228.—Transfer. (The Survivors are requested not to write on or below the space for Committee's Minute.)

Total Capacity of Generators *2693* *2275* Kilowatts.

The amount of Fee ... *Liri 8837.-* } *To become use*  
 When applied for, *ready*

Travelling Expenses (if any) £ *✓* : *14.3.29*  
 When received, *1929*

*[Signature]*  
 Surveyor to Lloyd's Register of Shipping.

Committee's Minute *TUE. 8 JAN 1929*

Assigned *Ele Light*

